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on Soviet
GDP and defense
spending (p. 4-5)
and to "USIA" con-
clusions re Soviet
intentions (p. 6))

MILITARY-INDUSTRIAL COMPLEX- | RUSSIAN

STYLE

With absolute priority in machinery, materials, and men, it is an efficient, segregated world of its own, operating at a level far above the still backward civilian economy. *by Richard Armstrong*

The highly respected Institute for Strategic Studies in London completed a survey of the world military balance last April and concluded that a historic moment had arrived. "The Soviet Union," said the institute, "must now be treated as a full equal [of the U.S.] in terms both of strategic power and of her ability to control conflict in the developing world." This appraisal was, to the Soviet leaders, accolade indeed, the old dream of the czars, of Lenin, and of Stalin come true at last. With its intercontinental missiles deep in their silos in Mother Russia, with its new, blue-water Navy on patrol in the Mediterranean, the Soviet Union need acknowledge one peer only, and no master, among world powers. This military prowess is the product of a ten-year drive by a highly advanced industrial stratum that leads a life of its own amid general backwardness.

The new Soviet military machine has been cut as if to an American pattern. There is a rough correspondence between the two countries in most of the major components of military power. Like the U.S., the Soviet Union has, ever since the ouster of Nikita Khrushchev in 1964, pursued a "balanced forces" concept that simultaneously increased the power of its strategic and its conventional capabilities. The Soviet Union has 3,470,000 men under arms, compared to 3,487,000 for the U.S. After a steady and rapid buildup, the U.S.S.R. has 1,035 ICBM's in place, compared to 1,054 in U.S. silos. The American lead in submarine-based missiles (656 to 129) and in long-range bombers (640 to 155) is offset somewhat by the Soviet Union's 750 medium-range missiles and 1,050 medium bombers. Each country has about 3,700 jet fighters.

The Soviet land force may well be the finest in the world. It totals some two million men, and of its 140 divisions, perhaps sixty are combat ready. Sixty divisions sounds overwhelming compared to twenty-two for the U.S. It must be borne in mind, however, that Soviet divisions contain 7,000 to 10,500 men, while standard strength for a U.S. division is 13,500 to 20,000. And there is an enormous amount of ground for the Soviet Army to cover, including the world's longest frontiers. In Central Europe, the U.S.S.R. has put as many combat troops into forward position, 320,000, as there are NATO troops

across the way. Russia has twice again as many troops in reserve west of the Urals. But on the China front it is the U.S.S.R. that is outmanned, with a covering force of about 200,000 men in 28 divisions opposite China's 2,500,000 men in 115 line divisions.

Western military analysts have enjoyed unprecedented opportunities to study Soviet troops and weapons in recent years, and they generally have been much impressed with what they have seen. The lightning Soviet invasion of Czechoslovakia was, according to a top NATO commander, "an almost classic pattern of a military deployment in logical sequence." The Russians threw twenty-two divisions across the border within twenty-four hours and completed their deployment within a week. Kickoff time for the invasion was 11:00 P.M., illustrating a Soviet fondness and talent for night maneuver. Road and rail discipline, according to NATO commanders, was excellent. Huge tank transports got the Soviet armor into position in combat condition rather than limping from a long road march. As the combat divisions moved west, reservists flowed smoothly into the vacated bases in central Russia and formed up into fighting units.

For the West, it was a sobering show. But the invasion produced a few reminders that this powerful military machine came from what is still, in many ways, a primitive country. A German diplomat, arriving back on station in Moscow while the invasion was on, asked his Russian driver why the streets were so empty and was told: "The trucks have all gone to the front." In Prague, the residents noticed "City of Kiev" and various Russian factory markings on Soviet Army trucks, beneath a hasty coat of olive paint. Some of the gasoline drums strapped to the Soviet tanks bore World War II Wehrmacht markings. The sky over Prague seemed full of An-22's, the new 200-hp turboprop that is the Soviet Union's nearest equivalent to the C-5A, but the appearance was deceptive. Only about ten An-22's are yet in service, and all were being used in short, round-the-clock hauls of men and supplies. The Soviet Army brought rations for only a few days and after that lived off the land. In logistics, obviously, the U.S.S.R. still trails the U.S.

continued

Blue-water reach

The Israelis captured great quantities of Russian military equipment in the Sinai in 1967 and, now that they have turned it around and pointed it the other way, are quite pleased with its performance. They found the Soviet 122-millimeter and 130-millimeter guns to be powerful and highly accurate weapons and used them to destroy the Egyptian refineries at Suez. They rate the Soviet T-55 tank among the finest instruments of destruction in the world. It has a low silhouette and is fast and highly maneuverable. Like U.S. tanks, it is equipped with a snorkel for fording, and has an infrared guidance system for night fighting. The Israelis have grown so fond of the Russian infantryman's storm rifle, the fully automatic AK-54, that they plan to produce their own copy.

The standard Soviet fighter, the MiG-21, a mach-2 aircraft, has only half the range and payload of its NATO counterparts, the F-4 Phantom and the F-105. The MiG-21 is slightly slower, but more maneuverable at high altitudes. Its chief flaws are a vulnerable belly tank and a large blind spot to the rear of the pilot. The Israelis, in Mirage-111C's, routinely shoot down MiG-21's, though their victories may well be due to pilot superiority rather than to the planes. A variable-wing fighter on the order of the F-111 has been displayed at a Moscow air show but is apparently not yet in service.

The most striking new departure for the Soviet military is a vast and expensive program to acquire global reach by means of a blue-water Navy. "The flag of the Soviet Navy now proudly flies over the oceans of the world," said the commander of the Soviet fleet, Admiral Sergei Gorshkov, last year. "Sooner or later the U.S. will have to understand that it no longer has mastery of the seas." "In a mere ten years," says Admiral Thomas Moorer, the U.S. Chief of Naval Operations, "the Soviet Union has transferred itself from a maritime nonentity to a major sea power. By any measuring stick, it is today the second-largest sea power in the world."

The Soviet Union now has 380 late-model submarines, of which 50 are nuclear powered. (The U.S. has 142, including 81 nuclear subs.) These are formidable underwater navies indeed, that of the Soviet Union being six times the size of Hitler's at the start of World War II. And according to recent testimony by the Secretary of Defense, Melvin Laird, the Russians are building more nuclear submarines at the rate of eight a year. The Soviet surface fleet includes thirty-five major missile-firing warships (versus seventy-one for the U.S.). The Russians have even organized a minuscule marine corps of 6,000 picked men, and they have built 100 landing ships. The only category of warship they have shunned is the aircraft carrier, of which the U.S. has fifteen. The Russians have built three helicopter carriers instead. They have been constructing merchant shipping at a prodigious rate, to supply their far-flung allies such as North Vietnam and Cuba, as well as to carry out an ambitious program of expanding foreign trade. The U.S.S.R. now has 10,400,000 tons of shipping (versus 14,800,000 under the U.S. flag) and has set a target of 20 million by 1980.

A Soviet fleet is now on permanent patrol in the Mediterranean, and a few of total U.S. naval supremacy there. Soviet units occasionally patrol the Indian Ocean as well, and have turned up as far away as Montevideo. The apparent aim, as the Institute for Strategic Studies put it, is "to control conflict in the developing world." "We shall sail all the world's seas," the Soviet chief of staff, Marshal Matvei Zakharov, warned last year. "The imperialists can no longer have them to themselves."

Growth pays the bill

Land-based missiles, missile submarines and warships, a conventional army in a high state of readiness—these are costly trappings of power, the sort that have produced a severe budget pinch even in the U.S., where the gross national product of \$860 billion is about twice the Soviet G.N.P., as the U.S. Government reckons it. A feeling persists among some critics of the U.S. defense establishment that the Russians must have figured out some way to get more defense readiness for their money than the Americans. There are indeed a few substantial economies that the Soviet armed forces enjoy. Commandeering civilian trucks for an invasion is obviously less expensive than buying them. But, in general, the Soviet Union has matched the U.S. in military power by matching the U.S. in spending.

The Stanford Research Institute, which laboriously compiles and analyzes Soviet budget figures, estimates that Soviet expenditures for defense and space have been increasing by about 6½ percent a year for the past decade and this year reached a total somewhere between \$54 billion and \$62 billion. The Central Intelligence Agency's estimate of Soviet defense and space expenditures, \$60 billion, falls within the range of the Stanford estimate. By the CIA calculation, the Soviet Union is spending \$24 billion less than the \$84 billion the U.S. has budgeted for defense, space, and the Atomic Energy Commission in the coming fiscal year. But the U.S. is spending an estimated \$27 billion a year on the war in Vietnam, while the Soviet Union is spending less than a billion annually in its role as supplier to North Vietnam. If these Vietnam costs are excluded, the Soviet Union is spending slightly more than the \$57 billion that the U.S. is budgeting for defense, atomic energy, and space.

The Soviet Union has been able to maintain these enormous and constantly rising defense costs without lowering the already rather meager Soviet standard of living. In fact, per capita disposable income has increased 7½ percent a year since 1964, and investment in consumer industries was increased last year alone by 25 percent. The Soviet Union, like the U.S., enjoys an annual increment from the growth of the economy. In the Soviet case, with an average growth rate of 5.4 percent in recent years, this increment amounts to about \$30 billion a year, out of which the U.S.S.R. has been able to pay for the increase in defense costs as well as provide some dividends to the consumer.

Thinking about the large Soviet arms program in Western terms, the presumption would be that a strong military-industrial clique has been dominating budgetary

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decisions in Sovietology, this is looking at the question the wrong way around. "The modern Soviet state is a military-industrial complex," says John Hardt of the Research Analysis Corp. in McLean, Virginia. "It was blatantly designed that way by Joseph Stalin, beginning with the first Five-Year Plan in 1928." The Soviet leadership, since Stalin, has been trying, with only fitful success, to broaden the pattern without radically changing it. The argument in this country is whether the U.S. defense industry has gained too much power within a civilian society. By con-



The master builder of the Soviet defense industry is Dmitri Fedorovich Ustinov, sixty-one, a candidate member of the Politburo and a secretary of the Communist party's Central Committee. An engineer from Kuybyshev on the Volga, Ustinov took charge of arms production in the shambles of the Nazi invasion in 1941 and went on to build a "strategic sector" that is both the pride and the

bane of the Soviet economic system. In contrast, the debate over resource allocation in the Soviet Union during the post-Stalin period has been over how much could be spared for consumption in context of the leadership's vision of world primacy.

The only serious attempt at cutting arms costs in recent Soviet history came in the later years of Nikita Khrushchev, who saw the missile age as a chance to increase power while trimming conventional forces by almost a million men. In 1962 and 1963 letter columns in the Soviet press carried bitter complaints by former captains and majors who had been obliged to take jobs as ordinary workers. The coup that ousted Khrushchev, in October, 1964, was political in origin, but Army leaders endorsed it with enthusiasm. One reason the present defense budget is so high is that it represents the confluence of two weapon programs: the missile systems set in train by Khrushchev, and an extensive strengthening and modernizing of conventional forces ordered after his ouster.

The military's institutional leverage

Under the present Soviet leadership, the military has been able to increase its influence along with its weaponry. This is not because the military hierarchy is vigorous—Marshal Andrei Grechko, who was appointed Defense Minister in 1967, is in fact a singularly "safe" and colorless staff officer with a record of political pliability—but because the political leadership is weak. "The Politburo has been trying to rule by consensus," says a U.S. diplomat, "trying to carry all eleven members along on key decisions. This is a slow and awkward business at best.

stitutions assume more importance, and the military is the strongest institution in Soviet society outside of the Communist party itself." All of the truly disastrous possibilities facing the Politburo, including satellite uprisings or a border war with China, are, of course, military matters, and the military leaders are consulted on foreign policy.

But military influence does not mean military control. Matthew Gallagher of the Institute for Defense Analyses in Arlington, Virginia, points out that the Soviet leadership continues to seek arms-control talks with the U.S. even though the military press has been openly critical of the whole idea. The political-military relationship in the Soviet Union is one of continuing and inevitable tension, according to the institute's Roman Kolkowicz, who wrote the definitive study of the subject. Ever since the Red Army was organized by Leon Trotsky in 1918, it has been run on a system of "parallel hierarchies," with a military and a political officer sharing power at each ascending level of command. An officer caste has grown up through the years, and indeed has been encouraged by the politicians. An officers' club in Moscow is as well appointed as a gentleman's club in London, with deep leather couches, wood paneling, and mess-jacketed attendants. Officers have free cars and dachas and shop at their own stores, which stock Belgian woolens, Italian shoes, and the like. But the marshals have been kept out of the very top rank of the country's leadership. No Soviet officer sits on the Politburo, although Grechko and eleven other officers are members of the Central Committee.

There has never been a Bonapartist tendency in the Russian military, not even back in czarist days. "A military take-over," says Hardt, "would mean the end of the Soviet system as we know it today." The military leaders are all members of the Communist party, of course—some of them only perfunctorily so and some of them as true believers. In turn, most of the politicians in the Politburo have served at one time or another as political officers in Army units. Like some U. S. Congressmen who are also reservists, these Russian politicians frequently share the military point of view. Communist party Chairman Leonid Brezhnev, who was a brigadier general on the Ukrainian front during the war, is thought of in particular as a military-minded civilian. But the military is, apart from the secret police, the only Russian institution with guns, and the military-political tension is never entirely resolved.

The specialist from the steppes

The desk where military requirements first make their demand on the Soviet economy sits within the rather grim stone headquarters of the Communist party's Central Committee, on Staraya Square in downtown Moscow. This is where Dmitri Fedorovich Ustinov has his offices as a candidate member of the Politburo, a secretary of the Central Committee, and the director of Soviet defense industries. Comrade Ustinov is a handsome man of sixty-one, with an open face and high forehead, a native of Kuybyshev in the

stepped along the Volga and a graduate of the Leningrad Institute of Machine Building. He was a highly skilled technician but a mediocre designer and then director of the Bolshevik munitions plant in Moscow, and was picked by Stalin in 1941 at thirty-three to become People's Commissar of Armaments, a post he has held under one title or another ever since.

On the record, Ustinov is a remarkably able executive, having accomplished the bodily transfer of the Soviet armaments plants to the safety of the Urals in 1941, the building of an atomic bomb in just two years, and the launching of the world's first spacecraft. The only time he has ever been in trouble was once when Khrushchev criticized him for waste during the campaign to cut military spending. Ustinov's job has no counterpart in the U. S., but includes many of the functions of the U. S. Secretary of Defense. As a candidate member of the Politburo, Ustinov outranks Grechko and the rest of the marshals. The marshals, however, are not Ustinov's subordinates, but rather his clients and his allies in the budgetary battles each fall. Both Ustinov and Grechko are thought to sit on the Soviet Defense Committee, which is akin to the U. S. National Security Council and is probably chairmanned by Brezhnev himself.

The industrial complex that Ustinov heads is a coherent and integrated network of plants and research establishments, generally known in the Soviet Union as the "strategic sector." This complex is the pride of the Politburo, whose members make frequent trips to the defense plants to admire the automated production lines and the latest high-precision machine tools from Switzerland, taking great encouragement from all this visible proof of modernity. Khrushchev often held the strategic sector up as an example to Soviet industry.

The Soviet heavy-weapon plants, for tanks, trucks, and artillery, are still located mainly in the Ural complex that Stalin and Ustinov set up from Sverdlovsk south to Cheljabinsk and Magnitogorsk, feeding off the steel that is produced there in great quantity from Ural ore. This steel triangle is still out of bounds to all Western visitors.

Most of the precision work, including electronics and the manufacture of missile components, is concentrated in the Moscow-Leningrad-Gorky area that is the industrial heartland of Russia. The largest shipyards are here too, with the notable exception of a submarine yard at Severodvinsk, near Archangel. This is where the Soviet nuclear submarines are built, and according to a recent statement by Admiral Hyman Rickover, the Severodvinsk yard has "several times the area and facilities of all U. S. submarine yards combined." One of the main Soviet missile factories is in an old automobile plant in Dnepropetrovsk in the Ukraine, and the other is in an armaments plant that dates back to the 1920's in Kaliningrad, near Moscow. The testing site for ICBM's is at Baykonur, off the Aral Sea, where the Russians took Charles de Gaulle to watch a launch. The principal fissionable-material plants are in Semipalatinsk and two other cities in Kazakhstan, out near the Mongolian and Chinese borders, a location that would have seemed safe enough twenty years ago but that now must give the planners nightmares. The giant Skoda arms plant, now called the Lenin Works, in Pilsen, Czechoslovakia, is the major outside munitions supplier, producing everything from small arms to MiG-21's. East Germany is building millions of tons of merchant ships for the Soviet Union, mostly at below-cost prices.

The strategic sector has absolute priority on machinery, technicians but not on production-line workers. According to the late Dr. Leon Herman, a specialist in Soviet affairs at the Library of Congress, one primary function of Communist party cadres throughout Soviet industry is to spot promising people for transfer to the strategic sector. Once in this sector, the worker is happy to stay, since wages are quite handsome by Soviet standards. A system of factory-owned apartment houses and vacation hotels nicely segregates the strategic worker from the rest of Soviet society in his personal as well as his professional life. Ustinov gives plant managers a great deal of freedom so long as they meet production quotas. Such famed aircraft designers as Mikoyan, Gurevich, and Tupolev run their plants virtually as personal fiefs, setting up subsidiary plants as needed to produce components. Tupolev has appointed his own son as his chief designer.

Crash programs are common in the strategic sector. Ustinov frequently double-teams a project at least through the research and development stage. The ad hoc committee is a favorite management device, consisting of production specialists, scientists from basic-research centers such as the one at Novosibirsk, and representatives from Ustinov's office. Because of this approach, U. S. weapon experts concede that the Soviet Union can sometimes go from idea to production line rather more quickly than the U. S.

Two kinds of costs

What all of this truly costs the Soviet Union may be beyond computation. Less than two-thirds of Soviet defense spending is listed under the defense category in the state budget. The Stanford Research Institute attempts to track down the rest of it under various budget residuals and under some scientific expenditures, and comes up with a current figure of 27 billion to 31 billion rubles. An additional problem is posed in the conversion of rubles into dollars, since the official Soviet rate of 0.9 rubles to the dollar is entirely arbitrary. Stanford Research uses a figure of 0.5 to the dollar, or \$2 per ruble. The institute derives that figure from studies based upon rare, 1955 Soviet wholesale price handbooks, and on an analysis by a Soviet economist whose work is known and respected in the West.

According to government sources, the CIA avoids the budgetary fog entirely and uses its intelligence network to estimate Soviet military procurement, item by item, which it then prices according to what this equipment would cost if produced in the U. S. The two organizations thus follow entirely different routes to arrive at a similar estimate, of about \$60 billion in current Soviet defense and space spending.

This estimate is probably accurate enough. The problem is that it is frequently used around official Washington in conjunction with an estimate of the Soviet gross national product that the CIA arrives at in a different way.

From the viewpoint of economic theory, it is just as valid to state U. S. gross national product in terms of what it would be worth in the Soviet Union in rubles as to state Soviet G.N.P. in terms of what it would be worth in the U. S. in dollars. In each case an alien price structure is imposed. The two methods of comparison yield quite different results. In

Soviet price terms, the Soviet G.N.P. amounts to somewhat more than a third of ours, while in dollars it amounts to 70 percent. The great disparity results mostly from the arbitrary nature of the Soviet pricing system as compared to pricing in a market economy.

To resolve the difficulty, the CIA carries out the calculations both ways, in rubles and in dollars. It then strikes the geometric mean and reports Soviet G.N.P. as half that of the U.S., which would come to \$430 billion. Abraham Becker, a specialist in the Soviet economy at the Rand Corp., maintains that while this estimate may be statistically convenient its economic rationale is doubtful. Certainly it is misleading when, as happens, the Defense Department releases a CIA estimate of Soviet defense spending computed by the dollar method, which yields a high figure, while the State Department uses the CIA estimate for Soviet G.N.P., arrived at by the route of striking a mean. Use of the two figures together, of course, tends to inflate the apparent share of G.N.P. the Russians spend for defense.

For purposes of assessing strategic capabilities, dollar comparisons are probably more meaningful, because market-economy mechanisms impose a degree of realism on prices. FORTUNE estimates the current Soviet G.N.P., in U.S. 1969 prices, at roughly \$600 billion. On this basis, both countries are spending about 10 percent of G.N.P. on defense and space. When Vietnam costs are excluded the U.S.S.R. is spending at a greater rate, 9.8 percent to 6.6 percent.

Footcloths are cheap

But the economies of the U.S. and the U.S.S.R. are so different that Alastair Buchan, director of the Institute for Strategic Studies, thinks any comparison in dollar estimates is of doubtful value. "There is no shortage of skills and materials in the U.S.," he points out. "The limiting factor in the U.S. is that defense spending competes for public money needed for other purposes. And the U.S. is a hard country to tax. Federal and state taxes come to about 30 percent of national income in the U.S., compared to about 40 percent in most European countries." In the Soviet Union, where the state owns the entire economy, "the problem is not public revenue but actual physical shortages of skills and materials." Buchan thinks a clear distinction should be made between troop levels, which the Soviet Union could easily expand at relatively little cost, and missile systems, where any expansion would be difficult.

Lower troop costs are the clearest single saving that the U.S.S.R. enjoys over the U.S. While officers are well paid by Soviet standards—a lieutenant gets 150 rubles a month and a marshal 3,000—the Soviet Union pays a recruit just 15 rubles a month. The Soviet soldier lives on a monotonous diet of soup, bread, and tea that would quickly send an American soldier around the bend. Moreover, he grows much of the food himself, in truck gardens and pig farms on each Army base. He is issued one uniform for winter and one for summer, and he wears not socks but *polyanki*, the Russian word for that is unchanged since czarist days. Only his equipment is first class. Khrushchev once revealed that the average yearly cost of a soldier to the Soviet Union was 1,375 rubles. This would mean that the present force level of 3,470,000 men costs the Soviet Union only 4.8 billion rubles, or \$9.6 billion at the Stanford Research exchange rate, compared to \$100 billion for the U.S. Army.

The bulk of Soviet defense spending is obviously going for something other than soup and *polyanki*.

Almost all military equipment today requires a high input of technology. This is true not only of missiles but of modern conventional weapons such as tanks with infrared guidance, or surface ships with sophisticated fire-control systems. Dr. Michael Boretsky, a Ukrainian-born economist for the U.S. Department of Commerce, feels that the Soviet Union is probably spending near its present limit on technology-intensive products, almost all of it connected with defense and space. By his calculation, 80 percent of Soviet research and development is already devoted to military and space work.

Firing squad for failure

Some of the high cost factors in the Soviet arms industry are exaggerations of problems that affect Soviet industry as a whole. In both design and operation of plants, cost-effectiveness concepts are almost unknown. Soviet machine tools are from 25 to 30 percent heavier than U.S. machine tools, according to Boretsky, and where U.S. engineers would build with a double safety factor, Soviet engineers insist on a safety factor of four or five. There once was a compelling reason for this approach: under Stalin, if a machine failed and the fault was traced to the designer, he was sent to prison or shot.

Other high-cost features are specific to defense. Boretsky listed some of them in a 1968 study for the Joint Economic Committee of the U.S. Congress: a high rate of equipment obsolescence, a need for standby equipment, frequent use of equipment for rare and unique applications, and heavy emphasis on the quality of the product. On this last point, Boretsky calculates that tooling to the average tolerance of 0.025 millimeters required for defense work, instead of the rather sloppy 0.1 tolerance that is the average of Soviet industry as a whole, means a quadrupling of tooling costs.

"The arms industry," as Boretsky sums it up, "preempts the best manufacturing plants and engineering goods, absorbs a high rate of scientific and engineering manpower, and consumes great magnitudes of capital." The phrase "dual economy" is sometimes used to describe the Soviet Union's peculiar combination of modernity and backwardness. John Hardt, of the Research Analysis Corp., says that really there are three layers: the primitive agricultural level, a consumer economy on the level of a developing nation such as Argentina, and an arms industry equaling that of the U.S. in sophistication.

But the arms industry itself pays a price in lost efficiency from its existence on a lonesome plateau of high technology. When Soviet designers set out to build the giant Mi-6 and Mi-10 two-turbine helicopters, for instance, they first had to build an extrusion press capable of fabricating the rotor. At the true price that the Soviet Union pays for its arms cost perhaps best be stated as the difference that this layer of high talent and priority resources could make if they were spread out through the rest of the economy. Certainly there would be a substantial jump in the gross national product which is something the leaders would dearly love to achieve.

Because the arms complex exists as a separate world, there has been remarkably little spin-off of new technology from the rest of industry. After a study of the subject while at the Brookings Institution, Boretsky, whose specialty is the only military

development. Approved For Release 2001/03/04 : CIA-RDP80B01439R000500160024-6 that about 70 percent of Soviet industrial production comes from 20,000 relatively large and efficient plants, while the remaining 30 percent comes from a generally backward network of 180,000 small factories and shops employing an average of fifty workers each. Quite a lot of money could be saved by closing down many of these small plants, but this will be difficult to do until capital becomes available to replace them.

Boretsky, it should be pointed out, is skeptical about spin-off even in the U.S. "The best way to learn how to make automobiles, after all, is to make automobiles, not missiles," he says. And this is a good example. After Henry Ford helped the Russians build an automobile plant at Gorky in 1932, they should have been able to keep up in this field with relatively little effort. Instead, the Soviet Union has fallen so far behind that it is importing an entire automobile factory from Fiat and has contracted for Renault to redesign the Moskvich factory. These measures are supposed to quadruple output to 800,000 automobiles a year when production gets going in 1970. The Soviet Union is also buying whole chemical plants from Japan and Great Britain. "There is not much difference, if any, between Russia and the U.S. in conceptual knowledge," says Boretsky, "but there are tremendous gaps in applied knowledge, all through great areas of civilian technology, and there is just no easy way for them to close these gaps."

A machine devoted to recreating itself

As a direct result of spending at the present high level for defense, the Soviet Union has begun a potentially dangerous cutback in the increase in new capital investment. Should this cutback continue, the results will sooner or later hit where they hurt a Communist leader the most, in his growth rate. "Guns or butter is a misleading projection of Soviet budget choices," says Hardt. "Guns or factories would be more accurate. New petrochemical plants, advanced machine tools—these are the kinds of things that compete with the military for budget allocations." The growth of capital investment has declined substantially, from 27 percent in Khrushchev's last three years to 16 percent during the period 1965-67.

The capital-investment sector is a tempting target for cuts, because the Soviet rate of capital formation continues to be the highest in the world after that of Japan. The Soviet Union devotes 30 percent of its G.N.P. to capital investment, compared to 17 percent in the U.S. Soviet industry has seemed increasingly to resemble a machine devoted to recreating itself. In the producer-goods sector, 80 percent of the output goes back into more producer goods and only 20 percent into production of consumer goods. Depreciated capital stock is already twice the G.N.P., whereas that of the U.S. is 20 percent less than G.N.P. But an infusion of large amounts of new capital is the only reliable method that the Soviet Union has found to maintain growth. Factor productivity—the output of a fixed unit of capital and labor—has been increasing at a rate of only 1.7 percent a year.

The Soviet planners are still counting quite heavily on greater efficiency through an ambitious program of economic reforms, which *FORTUNE* reported on in some detail three years ago (July 1 and August, 1966). By now, enterprises accounting for 72 percent of industrial production are operating on a profit system under which bonuses are supposed to depend on efficiency. Interest is being charged on capital for the first time in Soviet history, and in 1967 wholesale industrial prices were revised across the board to bring them more closely in line with reality. But prices still do not adequately reflect demand. And the least efficient plants are the ones still operating outside the new system. Leon Smolinsky

Economic results for two out of the last three years have been favorably affected by beneficent weather and bumper crops. With 36 percent of the work force still on the farm, weather is still the great swing force in the planned economy. The Soviet G.N.P. grew by 7.1 percent in 1966 and by 6 percent last year—good crop years—but only by 4.5 percent in 1967 when crops were average. Taking what may turn out to be hasty advantage of this windfall, the state apparently cut one billion rubles from the 10 billion planned for agricultural investment last year. Even after the cuts, the government is investing 50 percent more on agriculture than was spent in Khrushchev's last years, but this still may not be enough.

"There is a trap that Soviet planners have fallen into in the past," says Hardt. "They have a tendency to take the good years as norms and then to get caught by the bad ones." Khrushchev's crop failures and grain purchases abroad were nails in the coffin of his career. The past winter was an extremely severe one through most of the U.S.S.R., and this year's crops may be quite small.

A visceral feeling about defense

Hardt, along with most Sovietologists, feels that the broad and seemingly irreversible trend ever since Stalin's death has been toward the construction of a modern state, in which civilian needs will necessarily have a larger role than at present. The accelerating arms spending has been a counter-movement within this trend. These students of Soviet affairs feel that this countertrend may have gone about as far as it is likely to go—and in strategic weaponry even about as far as is possible at present. Now that the Soviet leaders have achieved a sense of strategic parity with the U.S., civilian needs may make themselves felt more forcefully within the leadership. "If mounting civilian demand coincides with a sharp fall in economic performance," says Hardt, "the resulting shock could be enough to produce a change of leadership."

On the other hand, the U.S. Intelligence Board estimate is that, in the absence of an arms-control agreement, the Soviet Union will probably try to go beyond parity and exceed the U.S. in strategic weaponry. Consumer welfare is not the sort of consideration that speaks deeply or naturally to the Soviet military mind, or to the mind of a party man like Brezhnev. "A Soviet leader, steeped in a history of invasions from the East and West, exposed to German invasion in two world wars, has a visceral feeling about defense needs," said Hardt. "Talk about improving housing or building automobiles seems pretty trivial by comparison."